

LESSON ONE:

MEET STEVE AND NIKKI

ACTIVITY AT A GLANCE:

Students view the website created by Steve and Nikki to communicate information about their mom's breast cancer. Students visit the website's forum and identify common misconceptions about cancer. Students create a graphic organizer about cancer and reply to the first message thread, "What is cancer?" posted by Steve and Nikki.

OBJECTIVES:

Upon completion of this lesson, students will be able to:

- Identify common misconceptions about cancer;
- Formulate an answer to "What is cancer?;" and
- Create a graphic organizer to represent what they know about cancer.

LESSON OUTLINE:

- Introduce website and forum.
- Create a graphic organizer.
- Post response to Steve and Nikki.

TIME:

One to two 30-45 minute class periods

SUBJECTS:

Health, Language Arts and Literacy, Science

VOCABULARY:

cancer

WEBSITE (<http://http://cinjweb.umdj.edu/sites/theboldinitiative/forum/>):

Students are introduced to the Williams family via Steve and Nikki's website. Students post their preconceptions about cancer as comments to Steve and Nikki's forum.

NATIONAL SCIENCE EDUCATION STANDARDS ADDRESSED:

A: Science as Inquiry

Abilities Necessary to do Scientific Inquiry

- Identify Questions and Concepts that Guide Scientific Investigations
- Communicate and Defend a Scientific Argument

C: Life Science

- The Cell

F: Science in Personal and Social Perspectives

- Personal and Community Health

CAREER CONNECTION:

- Biostatistician
- Epidemiologist

MATERIALS:

Introduce website and forum.

(Students learn that they will be helping Steve and Nikki, fraternal twins, to better understand cancer.)

- Computer(s) with internet access
- LCD projector
- Transparency and overhead projector (if needed)

Create a graphic organizer.

(Students create graphic organizers based on what they know about cancer.)

- Overhead transparency of What Do YOU Believe? (one page)
- Breast Cancer Trends handout (one page)
- Cancer Concept Map (one page; two versions)
- Computer(s) with internet access (if needed)

Post response to Steve and Nikki.

(Students respond to Steve and Nikki based on their new knowledge about cancer.)

- Computer(s) with internet access
- Overhead projector (if needed)
- Cancer Concept Map (one page; two versions)

ADVANCE PREPARATION:

Introduce website and forum.

- Review the materials in Appendix B, which includes resources for using the curriculum.
- Review the website and procedures for using the forum to read and post messages.
- Make overhead transparencies of the homepage and the “What is cancer?” message thread from Steve and Nikki’s website (if unable to project the website on a screen).
- Decide how students will post their messages in the forum.

Create a graphic organizer.

- Make one copy per student of the Cancer Concept Map worksheet for the version you plan to use if you will have students create concept maps for their graphic organizer. One version is simple and the second version has additional ideas about cancer.
- Review concept mapping if you choose to have students create their cancer concept maps online. IHMC CmapTools is a free downloadable software that can be used to create concept maps on the computer. Visit <http://cmap.ihmc.us/download/> for more information.

SUGGESTED PRESENTATION:

As a Do Now, ask students, “Why is it so important to become educated about health issues and health prevention?”

Introduce website and forum.

1. Using a computer with internet access and connected to an LCD projector, show the class Steve and Nikki’s website at <http://cinjweb.umdj.edu/sites/twins4mom/>. (If you do not have an LCD projector, use the overhead transparencies you made of the homepage and the “What is cancer?” message thread.)



2. Introduce students to the website and the characters Steve and Nikki. Tell students Steve and Nikki's story is based on real events but has been dramatized for educational purposes. Tell students they are going to learn about cancer and share their knowledge in the forum. Let students know someone will be reading their messages and responding to Steve and Nikki.
3. Log-in to the forum at the website and read the entries in the "What is cancer?" message thread. The following posts are samples. The actual content in the forum may vary slightly.

Note: The forum posts were written to be as authentic as possible. The grammar style used is deliberate.

Message Thread: What is Cancer?

Post 1: Steve

welcome to the forum. mom has a doctors appointment so she cant make my game. dad said he would leave work early to make the game. he usually cant come because of work. im glad hes coming but I wish mom could make it too. practice has been tough lately but at least it takes my mind off of whats going on at home.

Post 2: Nikki

mom seems more like herself again but i just cant stop thinking about her cancer. im supposed to go to the movies this weekend with kevin. but I dont know if I should go. I feel like I should stay home with mom. steve and i were talking and we still dont know what cancer really is and we don't want to bug mom and dad. can someone just tell us what exactly is cancer?

4. Tell the class they will develop a response to Steve and Nikki's questions about what cancer is. Working in small groups, have students brainstorm what they know about cancer. Ask each group to organize their thoughts and decide how they will answer Steve and Nikki's question. Assign roles, such as recorder, if needed. Do not be too concerned about what students write at this point. This is meant to be an open-ended activity to assess students' preconceptions about cancer. Students will post their responses after they create a graphic organizer.

Create a graphic organizer.

5. Introduce common misconceptions about cancer using the What Do YOU Believe? overhead. Record students' beliefs as you will reference them throughout the lessons. Student beliefs about cancer treatments will be referred to in Lesson 8.

The risk of dying from cancer in the United States is increasing. (FALSE)

Have students review and plot the Breast Cancer Trends data to make a conclusion about this statement. Students can graph the data individually or as a class. Graphs can also be completed as a homework assignment. Death rates are in fact decreasing.

Cancer can be spread from person to person. (FALSE)

Cancer cannot be passed from one person to another. Though cancer itself isn't contagious, sometimes viruses, which are contagious, can lead to the development of cancer. Two common cancers caused by viruses are cervical cancer and liver cancer. Human papillomavirus (HPV) — a sexually transmitted disease — can cause cervical cancer. And hepatitis C — a virus transmitted through sexual intercourse or use of infected intravenous (IV) needles — can cause

liver cancer, though only a small number of those with the virus will develop liver cancer.¹

What someone does as a young adult has little effect on their chance of getting cancer later in life. (FALSE)

Most cases of cancer are the consequence of many years of exposure to several risk factors. What you eat, whether you are physically active, whether you are sunburned, and especially, whether you smoke as a young person have a substantial influence on whether you develop cancer later in life.²

There is currently a cure for cancer but the medical industry won't tell the public about it because they make too much money treating cancer patients. (FALSE)

Think about it – plenty of doctors and their loved ones die of cancer each year. Why would anyone hide such an important discovery? Think about the speed with which other medical breakthroughs in vaccines and antibiotics have been announced and applied. And remember, cancer is many diseases rather than a single disease, and cures are already available for many forms of cancer. Fewer than half of all people with cancer in the U.S. actually die of the disease.¹

Treating cancer with surgery can cause it to spread throughout the body. (FALSE)

Specialists in cancer surgery know how to safely take biopsy samples and to remove tumors without causing spread of the cancer. In many cases, surgery is an essential part of the cancer treatment plan.²

Cancer can be effectively treated. (TRUE)

The four major types of treatment for cancer are surgery, radiation, chemotherapy, and biologic therapies.

Cancer is a group of over 100 diseases. (TRUE)

There are more than 100 different types of cancer. The main categories of cancer include:

- *carcinoma (cancer that begins in the skin or in tissues that line or cover internal organs);*
- *sarcoma (cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue);*
- *leukemia (cancer that starts in blood-forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced and enter the blood);*
- *lymphoma and myeloma (cancers that begin in the cells of the immune system); and*
- *central nervous system cancers (cancers that begin in the tissues of the brain and spinal cord)³.*

Cancer cells can be distinguished from normal cells because of their abnormal growth. (TRUE)

Normally, cells grow and divide to produce more cells as they are needed to keep the body healthy. Sometimes, this orderly process goes wrong. New cells form when the body does not need them, and old cells do not die when they should.³

Cancer can only occur in specific cells in the body. (FALSE)

The body is made up of many types of cells and all cancer begins in cells. Cancer can develop in any cell in the body which is why there are so many different types.

Cancer develops because of abnormal gene function. (TRUE)

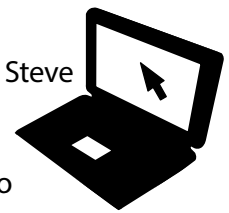
Scientists have learned that cancer is caused by changes in genes that normally control the growth and death of cells. Certain lifestyle and environmental factors can change some normal genes into genes that allow the growth of cancer. Many gene changes that lead to cancer are the result of tobacco use, poor diet, exposure to ultraviolet (UV) radiation from the sun, or exposure to carcinogens (cancer-causing substances) in the workplace or in the environment. Some gene alterations are inherited (from one or both parents). However, having an inherited gene alteration does not always mean that the person will develop cancer; it only means that the chance of getting cancer is increased.²

6. Have each student complete a graphic organizer to represent what they know about cancer. Either use the Cancer Concept Map worksheet, concept mapping software or have students create a KWL chart.

Note: A KWL chart is a type of graphic organizer. To make one, have students create the following three columns on a piece of paper: K-what they know about cancer; W-what they want to learn about cancer; and L-what they have learned in the lessons related to cancer. Students should leave room in the L column for additional information.

Post response to Steve and Nikki.

7. Ask students if they would like to make any changes to their initial messages to Steve and Nikki based on their graphic organizers and allow time to do so. Students can post their responses to the forum once their message is finalized. When all groups have posted, review the comments as a class. Comments can be used to assess student comprehension.



Resources (Available as of January 2010):

The National Program of Cancer Registries, Centers for Disease Control and Prevention.
<http://apps.ncccd.cdc.gov/uscs/>

Livestrong at School.

http://www.livestrong.org/site/c.khLXK1PxHmF/b.3474365/k.A6DA/LIVESTRONG_at_School__Cancer_Lesson_Plans_Cancer_Curriculum.htm

Cancer.Net

<http://www.cancer.net/patient/Cancer+Types/Breast+Cancer?sectionTitle=Overview>

¹ Mayo Clinic. Cancer Causes: Popular Myths about the Causes of Cancer.
Online: <http://www.mayoclinic.com/health/cancer-causes/CA00085>

² American Cancer Society. Top 10 Cancer Myths Quiz.

³ Cancer Institute. Defining Cancer.

Online: <http://www.cancer.gov/cancertopics/what-is-cancer>

What Do YOU Believe?

Name: _____

Date: _____

TRUE

FALSE

- | | | |
|-------|-------|---|
| _____ | _____ | The risk of dying from cancer in the United States is increasing. |
| _____ | _____ | Cancer can be spread from person to person. |
| _____ | _____ | What someone does as a young adult has little effect on their chance of getting cancer later in life. |
| _____ | _____ | There is currently a cure for cancer but the medical industry won't tell the public about it because they make too much money treating cancer patients. |
| _____ | _____ | Treating cancer with surgery can cause it to spread throughout the body. |
| _____ | _____ | Cancer can be effectively treated. |
| _____ | _____ | Cancer is a group of over 100 diseases. |
| _____ | _____ | Cancer cells can be distinguished from normal cells because of their abnormal growth. |
| _____ | _____ | Cancer can only occur in specific cells in the body. |
| _____ | _____ | Cancer develops because of abnormal gene function. |

What Do YOU Believe?

TRUE	FALSE	Answers
_____	<u> X </u>	The risk of dying from cancer in the United States is increasing.
_____	<u> X </u>	Cancer can be spread from person to person.
_____	<u> X </u>	What someone does as a young adult has little effect on their chance of getting cancer later in life.
_____	<u> X </u>	There is currently a cure for cancer but the medical industry won't tell the public about it because they make too much money treating cancer patients.
_____	<u> X </u>	Treating cancer with surgery can cause it to spread throughout the body.
<u> X </u>	_____	Cancer can be effectively treated.
<u> X </u>	_____	Cancer is a group of over 100 diseases.
<u> X </u>	_____	Cancer cells can be distinguished from normal cells because of their abnormal growth.
_____	<u> X </u>	Cancer can only occur in specific cells in the body.
<u> X </u>	_____	Cancer develops because of abnormal gene function.

Breast Cancer Trends

Age-Adjusted U.S. Death Rates by Year and Sex

(Rates are per 100,000 and are age-adjusted to the 2000 US population.)

Year of Death	Total	Males	Females
1980	18.0	0.3	31.7
1981	18.2	0.3	31.9
1982	18.4	0.3	32.2
1983	18.3	0.3	32.1
1984	18.8	0.3	32.9
1985	18.8	0.3	33.0
1986	18.8	0.3	32.9
1987	18.7	0.3	32.7
1988	19.0	0.3	33.2
1989	19.0	0.3	33.2
1990	18.9	0.3	33.1
1991	18.7	0.3	32.7
1992	18.7	0.3	31.6
1993	18.0	0.4	31.4
1994	17.7	0.4	30.9
1995	17.4	0.4	30.6
1996	16.8	0.3	29.5
1997	16.1	0.3	28.2
1998	15.7	0.3	27.5
1999	15.2	0.3	26.6
2000	15.2	0.4	26.6
2001	17.7	0.3	26.0
2002	14.5	0.3	25.6
2003	14.2	0.3	25.2
2004	13.7	0.3	24.4
2005	13.5	0.3	24.0
2006	13.2	0.3	23.5
2007	12.9	0.3	22.9
2008	12.6	0.3	22.5
2009	12.4	0.3	22.2
2010	12.3	0.3	21.9
1975-2010	16.3	0.3	28.7

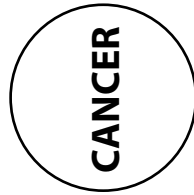
Source: National Cancer Institute. SEER Cancer Statistics Review 1975-2006.

Cancer Concept Map

Construct a concept map illustrating what you know about cancer. You can use circles, ovals, squares, or other shapes for main concepts or ideas.

Name:

Date:



Cancer Concept Map

Construct a concept map illustrating what you know about cancer. You can use circles, ovals, squares, or other shapes for main concepts or ideas.

Name: _____

Date: _____

**Screening &
Diagnosing**

**Causes &
Risk Factors**

CANCER

Treatment

Cells

Genes